SURGICAL TREATMENT OF PERFORATING GASTRIC ULCER.[1]

WITH REPORT OF THREE CASES, TWO ACUTE AND ONE CHRONIC.

BY ROBERT G. LE CONTE, M.D.

OF PHILADELPHIA,

Surgeon to the Pennsylvania, to the Children's and to the Bryn Mawr Hospitals.

CASE I.—H. K., aged 26, white, laborer, single, born in Philadelphia, admitted to the Pennsylvania Hospital March 6, 1906.

Previous History.—Strong and healthy, but during the past six months has had more or less frequent attacks of indigestion, with pain and occasional vomiting; on two or three occasions the vomitus contained blood. Half an hour before admission the patient was standing on a box about two feet high, lifting a sack of oysters from the ground. He suddenly felt a sharp, cutting pain in the abdomen, and fell off the box, striking his left side. In a few moments this pain was intense. On examination there were no marks of contusion on the body. The abdomen was very rigid, particularly over the epigastrium, and there was exquisite tenderness in this region. He complained that the abdominal pain was agonizing. The pulse was good, but the temperature subnormal; sweating profuse; countenance drawn and pinched. He vomited once a small quantity of stringy mucus. The last meal was taken about five hours before the onset of the attack.

Diagnosis, acute, perforating gastric ulcer.

Operation was begun three hours and a half after the onset of the first symptom; anæsthesia with ethyl chlorid, followed by ether. A four-inch incision was made in the median line between the ensiform and umbilicus, and on opening the peritoneum a frothy fluid of pale green color was found free in the abdomen. The stomach, which was flaccid and empty, was immediately explored, and a hard, indurated mass found half an inch from the pylorus on the lesser curvature. The pylorus was brought into

[1] Read before the Philadelphia Academy of Surgery, October 1, 1906.

the wound and walled off with gauze. The thickened area was partially covered with lymph, with a distinct dimple at one point from which white scar-tissue radiated, evidently the cicatrix of an old ulcer. No fluid was escaping, nor was an opening visible until the lymph was removed, when a thin pale fluid flowed out of a perforation about the size of a match head. This was inverted with a double row of Lembert sutures of Pagensteeher thread, and a piece of omentum tacked over the line of suture. A cigarette drain was carried down to the region of the ulcer and the abdominal wound closed with through-and-through silkworm gut sutures, the rectus fascia being united with a running catgut stitch. A buttonhole incision was made just above the pubis and a glass drainage tube inserted to the bottom of the pelvis. The abdomen was not flushed and the region of the ulcer alone was sponged. The patient was placed in bed in almost a sitting position and continuous enteroclysis used after the method of Murphy.

March 7.—The patient's condition is excellent. There is no pain; the water by bowel is well retained; temperature 100; pulse 80; bowels have moved once; very little drainage from the suprapubic opening.

March 8.—The patient has developed a bronchitis, with considerable cough and yellowish expectoration. The temperature is 100; abdomen slightly tender; bowels have moved once; no drainage from the suprapubic incision. The drainage tube was found to be entirely surrounded by omentum, which had penetrated the small openings and completely blocked up the tube. It was necessary to give the patient ethyl chlorid and to ligate and cut away a portion of the omentum before the tube could be removed. Water was given in drachm doses every 15 minutes. The convalescence from this time was uninterrupted. By the end of a week he was on a soft diet of eggs, custards, etc., which was gradually increased to the ordinary house diet. Cultures taken from the peritoneal cavity at the time of operation were entirely negative.

Case II.—D. L. B., aged 27, white, single, bartender, born in New York; admitted to the Pennsylvania Hospital April 21, 1906.

Previous History.—Has always been healthy, though given to slight excesses induced by his occupation. For a week pre-

vious to admission he had been feeling out of sorts, with some indigestion and general malaise. There was no vomiting and no previous history of indigestion.

While straining at stool he was suddenly seized with sharp epigastric pain, which rapidly became agonizing. He was admitted to the hospital within half an hour of the onset of the symptoms. The epigastric region was found to be of board-like rigidity, with exquisite tenderness. The pulse was good; temperature subnormal; countenance anxious.

Diagnosis, acute perforating gastric ulcer.

Operation was begun within an hour of the onset of the first symptom. Anæsthesia, ethyl chlorid, followed by ether. A four-inch incision was made through the inner border of the right rectus between the ensiform and umbilicus. There was no soiling of the general peritoneal cavity, although it contained a slight excess of fluid. The stomach, upon examination, was empty, and an indurated area was felt on the posterior wall near the pylorus, very close to the greater curvature. The gastro-colic omentum was torn through and the lesser peritoneal cavity found moderately soiled by gastric fluids. The indurated area on the posterior wall showed a perforation a little larger than a pin's head, which was partially covered with lymph. This opening was inverted with Pagenstecher thread and then whipped over with catgut. The lesser peritoneal cavity was sponged dry, but as it was feared that some of the fluid which it contained had found its way into the general peritoneal cavity during the operation, it was deemed advisable to drain the general cavity through a suprapubic incision with a glass tube. The upper abdominal wound was closed with a small cigarette drain leading to the lesser peritoneal cavity. The patient was placed in bed in a nearly upright position and continuous enteroclysis given.

April 22.—Condition remarkably good; free drainage from the suprapubic wound. Placed on drachm doses of water every 15 minutes.

April 23.—All drainage removed; enteroclysis discontinued; bowels freely moved. For the rest the convalescence was uneventful.

The night of the Fourth of July, after spending the day down the river with some companions, and having partaken of 14 or 15 bottles of beer and a large amount of cold indigestible food,

he was seized with severe pain in the region of the stomach, with active emesis. Vomiting brought relief but was followed by a few hours of epigastric tenderness. At the end of 24 hours he was as well as ever. After such a test of overloading the stomach there is little doubt that the healing of this ulcer was complete.

These two cases are types of acute perforating gastric ulcer in which rupture takes place without warning, and where the patient is in apparent health and leading his normal life. In both, muscular effort was the exciting cause of the rupture, and in neither were there any peritoneal adhesions, although lymph had been thrown out in the first case in sufficient amount to temporarily close the opening.

The points in these cases to which I would invite discussion are, first, the question of drainage; and, second, whether gastro-enterostomy should or should not have been done.

1. Drainage.—In Case I the abdomen was opened three hours and a-half after the onset of the first symptom. Soiling of the peritoneum with a greenish fluid was moderate and general as far as the eye could reach. In view of the after history, as the suprapubic opening drained for 24 hours only, it seems probable that sponging or flushing the peritoneal cavity with closure of the wound without drainage would have been a safe procedure.

In the second case the lesser peritoneal cavity alone was contaminated at the time of operation, and drainage of this area with a gauze wick would perhaps have been all that was needed, although the tube leading to the bottom of the pelvis gave free drainage for 36 hours.

The reasons which led me to drain both these cases were, first, I have no fear of drainage, believing that if it does no good it is at least not a source of danger in a modern hospital. Second, I desired to use the method practised by Murphy for the treatment of general peritonitis—the exaggerated Fowler position; continuous enteroclysis, etc., and one of the essential steps in this procedure is a suprapubic opening to remove all fluids that drain into the pelvic cavity.

Granting that both these cases might have recovered with-

out drainage, I still think their chances were slightly improved by using it.

2. Gastro-enterostomy.—In each of these cases the patient reached the operating-table in excellent condition. There was no necessity for hurry, and had there been any strong indication for gastro-enterostomy it could readily have been done. It was not done, first, because there was no external evidence of other ulcers being present either in the stomach or duodenum; and, second, because closing the perforation did not diminish the calibre of the pylorus.

If we consider the question of gastro-enterostomy from a mechanical standpoint only, it will be indicated when one of the three following conditions is present:

1. Multiple ulcers of the stomach or duodenum. When there are several ulcers and the one that has perforated alone is treated, *i. e.*, closed by suture, we leave the stomach in practically the same condition that it was in previous to the rupture, as nothing has been done to remove the sources of irritation which led up to the perforation. Each ulcer that remains is therefore a potential source of rupture. There is also the danger of hæmorrhage, which is ever present in a gastric ulcer.

2. Where suture of the perforation causes narrowing of the pylorus or duodenum to such an extent that the passage of food will be interfered with, gastro-enterostomy will be necessary to drain the stomach and prevent dilatation of that organ, with stagnation of food.

3. Where firm closure of the perforation cannot be accomplished through direct suture, and an omental patch has to be used, gastro-enterostomy is clearly indicated to prevent distention of the stomach and consequent strain on the patch. I say clearly indicated, but not imperatively, for I saw a case with my colleague, Dr. Gibbon, in which an omental patch was used to close an opening that could not be sutured, and recovery ensued without a gastro-enterostomy. In this case all foods and liquids were withheld from the stomach for a period of three weeks, the patient being nourished entirely by the rectum.

Unfortunately, these mechanical considerations cannot

alone be our guide in the performance of a gastro-enterostomy, for the operator must carefully consider the following questions before it can be safely undertaken:

1. Is the condition of the patient sufficiently good to stand the lengthening of the operation by 20 or 25 minutes?

2. Is its performance likely to spread an already present infection or open up a new avenue for infection? For instance, the whole lesser peritoneal cavity will be open to infection when a posterior gastro-enterostomy is done for a rupture on the anterior wall of the stomach.

3. Can it be postponed to a later date when the patient's condition has improved and the peritoneal cavity is free from infection, the stomach in the meantime being placed absolutely at rest and the patient tided over by rectal alimentation?

If this last query can be answered in the affirmative the question is at once in abeyance, and its ultimate decision may be left to a more favorable time. As Mayo has suggested, a conservative and palliative operation with a living patient is better than a brilliant and completed one at a greatly enhanced risk.

I am indebted to Dr. D. E. Kercher, the attending physician, for the notes of the following case:

CASE III.—Chronic perforating gastric ulcer. Death from inanition. Mrs. L. H., aged 51; housewife; white; American. Mother died at the age of 57 of an injury; father and one brother died of tuberculosis.

Previous History.—Has always been fairly well; no children; normal menopause at 45. In June and July, 1902, she had frequent attacks of paroxysmal abdominal pain, which was not localized. Occasionally slight jaundice accompanied these attacks. They seemed to be traceable to dietary indiscretions. The abdomen was tender and there was slight rigidity in the region of the appendix. Rest with regulation of diet brought about entire relief.

September 19, 1902.—Another attack of severe abdominal pain, with tenderness, lasting several days.

December 12, 1902.—During the night she was seized with

severe crampy pains in the lower abdomen, with marked tenderness and tympany. There was also slight tenderness and rigidity in the splenic region. The temperature was 100⅘; pulse 110; complete anorexia. She lies on her back with knees drawn up.

This attack was treated with ice locally, and starvation. In three days the tenderness had disappeared, except over the region of the appendix, but the temperature had risen to 102.

Pelvic examination showed a small, retroverted, adherent uterus; otherwise negative. Leucocytes 16,000.

At the end of ten days, as the tenderness still persisted over the appendix, operation was decided upon and this organ was removed by Dr. Kercher. At the same time the adhesions about the retroverted uterus were broken up and the fundus brought forward. The appendix was considerably injected, with a small hæmorrhagic area about one inch from the cæcum, and in the last three quarters of an inch the lumen was obliterated. For a week after the operation the temperature remained elevated, reaching 102, and then gradually declined. The recovery was complete. For six months she was free from pain, except for an occasional slight paroxysm in the epigastric region.

June 3, 1903.—At 3 A.M. she had a violent attack of stabbing pain in the right upper abdomen, which radiated to the left chest and into the bladder. The urine at this time was scanty, and on standing deposited a dense pink sediment. In a few hours constant nausea with retching developed. At the end of 24 hours there was frequent vomiting of dark brown stercoraceous material. The abdomen was greatly distended, with rigidity and tenderness in the epigastric region. For several weeks the temperature ran a distinctly septic course, ranging from 100 to 103. Epigastric tenderness was continuous, but otherwise there was little discomfort. On the 14th day pain was felt in the left lung, and an area of dulness could be mapped out in the mid-axillary line at the level of the eighth interspace. This gradually became more distinct, and on the twenty-fifth day during a fit of coughing she felt something burst in the left chest and immediately began to expectorate foul-smelling pus. Microscopic examination showed this pus to contain streptococci and staphylococci, but no tubercle bacilli. There was prompt amelioration of all the symptoms; the purulent expectoration lasting four weeks.

The appetite returned; she gained greatly in weight, and felt in better health than for many years.

This interim of comfort lasted until February, 1906, about two years and a-half. At the beginning of this month she felt stitchy pains in the base of the left lung at the site of the former trouble. On February 8, while attending a matinee, she was seized with such pain in the epigastric and splenic region that she had to leave the theatre and be taken home in a carriage. By the time she reached home the pain was agonizing. There was considerable cough and she complained of being chilly. Temperature 100; pulse 108; respirations 28. Examination of the chest revealed only a few crackling rales over the lower left lung posteriorly. Ice was applied to the epigastrium and morphia given hypodermically. In 24 hours the entire upper abdomen was very rigid, but the pain had diminished. Leucocytes, 17,200.

There was dulness over the lower border of both lungs posteriorly, with crackling rales and bronchial breathing. The cough was severe; expectoration rather scanty, but on three or four occasions it showed a characteristic rusty appearance. This condition of the lung continued for a week, when the cough became free, the physical signs of consolidation disappeared and she was fairly comfortable. The tenderness in the epigastrium and the rigidity, however, remained, and pain was most severe when the stomach was empty and was always relieved by taking food.

February 22, 1906.—The epigastric pain again became very severe and boring in character, with nausea followed by frequent vomiting. The vomitus was black disorganized blood. The stools were also tarry.

At this time I was called in consultation. I found the patient suffering an agony of pain; abdomen distended; rigid in upper portion; exquisitely tender. The diagnosis of chronic perforating ulcer was made, and in view of her former attacks of slight jaundice and the relief of pain on taking food the ulcer was thought to be in the duodenum. Immediate operation was advised and accepted, and the patient at once removed to the Methodist Hospital.

Ether anæsthesia. A six-inch incision was made through the right rectus muscle between the ensiform and umbilicus. The right side of the upper abdomen was found free from adhesions.

The gall-bladder and liver were normal, and the foramen of Winslow admitted the tip of the finger. To the left of the median line the viscera was densely matted together, and on breaking up the adhesions under the left lobe of the liver a large abscess was opened which extended posteriorly beneath the stomach. This cavity contained thick grumous pus filled with small dark blood-clots, and on introducing the finger the tip seemed to enter the cavity of the stomach. The stomach was immovable and the adhesions were so dense that it was impossible to expose the perforation. As the condition of the patient was not very good it was deemed advisable to drain the abscess cavity with a rubber tube and gauze, the incision being closed with interrupted silk-worm-gut sutures.

Reaction was prompt following the operation and there was immediate relief from pain. Slight nausea persisted but no vomiting. The drainage through the tube was very profuse, dark and flaky, with an odor of gastric contents. The patient was placed on nutritive enemata, and normal salt solution was frequently given by rectum. The discharge from the drainage-tube varied from 80 to 120 ounces in 24 hours, and it required but one minute for liquid taken by mouth to drain from the wound. Everything swallowed seemed to pass out through the drainage-tube. As nutrition could not be maintained the patient gradually sank, and died on the twelfth day of exhaustion.

Autopsy.—At the autopsy it was found impossible to expose the posterior wall of the stomach until the intestines had been removed from the abdominal cavity, the pylorus and œsophagus severed, and the firm adhesions binding the stomach to the posterior abdominal wall cut with a knife. The stomach was much contracted, the walls thick, and its posterior surface at the cardiac end contained a perforation the size of a silver dollar, with hard indurated edges. This perforation represented about one-third of the extent of the posterior wall of the stomach. The entire lower lobe of the left lung and the lower edge of the right lung showed recent consolidation.

From this history it is evident that the attack of June 3, 1903, was due to a perforation of this ulcer into a region that had been sufficiently walled off with adhesions to prevent a general infection. Slow leakage took place; a subphrenic abscess was formed,

which perforated the diaphragm and discharged itself through a bronchus in the left lung.

The question comes up, Could anything else have been done at the time of operation except drainage of the abscess cavity? From the post-mortem dissection it was readily seen that an exposure of the perforation would have been impossible unless steps had been taken to remove the entire stomach. Therefore closing by sutur was out of the question. In view of the density of the adhesions to the pancreas and the obliteration of all anatomical landmarks in this region, complete removal of the stomach would have been impossible during life. Our thought, therefore, was to drain the abscess with the hope that this cavity might be obliterated by adhesions and fibrous tissue, and during this time to support the patient by rectal feeding.

There was one other procedure which might have been tried had there been much improvement after operation; namely, a jejunostomy, for the purpose of feeding the patient and placing the stomach completely at rest, thus favoring the closure of the perforation by fibrous tissue. In this way the patient might have been tided over until she had gained sufficient strength to stand a more radical operation, or even a recovery might have ensued.